

CLAIMS

I claim:

1. A bolster plate for use in supporting a printed circuit board during attachment of an integrated circuit chip to the printed circuit board, comprising:

5 a support rail presenting a contact face for use in contacting the printed circuit board; the rail demarcating a central well;

the central well containing a support surface configured to support a selected area underneath the integrated circuit chip during attachment of the integrated circuit chip to the printed circuit board;

10 an insulator covering the support surface; and

a shim interposed between the insulator and the support surface.

2. The bolster plate of claim 1, wherein the shim has predetermined dimensions operable to compensate for bending of the bolster plate under a maximum applied load during attachment of the integrated circuit chip to the printed circuit board.

15 3. The bolster plate of claim 2, wherein the predetermined dimensions are selected from results of finite element modeling of bending characteristics of the bolster plate under the maximum applied load.

4. The bolster plate of claim 3, wherein the predetermined dimensions are sufficient to impart less than 0.001 inch bow at a center of the bolster plate under the 20 maximum applied load.

5. The bolster plate of claim 3, wherein the predetermined dimensions are sufficient to impart less than 0.0005 inch bow at a center of the bolster plate under the maximum applied load.

6. The bolster plate of claim 1, wherein the shim is a disk.

25 7. The bolster plate of claim 1, wherein the shim comprises at least two different pieces of different dimensions.

8. The bolster plate of claim 1, further comprising the integrated circuit chip and the printed circuit board assembled to the bolster plate.

9. A method of attaching an integrated circuit chip to a chip mounting receptacle in a printed circuit board with use of a bolster plate to support the printed circuit board, the method comprising the steps of:

assembling a bolster plate that includes

5 a support rail presenting a contact face for use in contacting the printed circuit board  
the rail demarcating a central well,

the central well containing a support surface configured to support a selected portion  
of the printed circuit board underneath the integrated circuit chip during  
attachment of the integrated circuit chip to the printed circuit board,

10 an insulator covering the support surface, and

a shim interposed between the insulator and the support surface;

attaching the bolster plate to the printed circuit board; and

pressing the integrated circuit chip into the chip mounting receptacle.

10. The method according to claim 9, wherein the step of assembling the bolster  
plate comprises

15 modeling a bending moment in the bolster plate under a maximum applied load for  
use in the step of pressing the integrated circuit chip to provide model results for shim-based  
compensation of the bending moment, and

selecting dimensions of the shim based upon the model results.

20 11. The method according to claim 10, wherein the step of modeling the bending  
moment comprises modeling a plurality of separate shim components.

12. The method according to claim 9, wherein the step of pressing the integrated  
circuit chip comprises inducing a bow at the center of the bolster plate having a magnitude  
less than 0.001 inch.

25 13. The method according to claim 12, wherein the magnitude is less than 0.0005  
inch.

14. A computer readable form comprising machine instructions operable for:  
determining a bow deformation in a bolster plate when the bolster plate is placed  
under a maximum load during attachment of an integrated circuit chip; and  
30 identifying dimensions for a shim that may be used to compensate for the bow  
deformation.

15. The computer readable form of claim 14, wherein the shim comprises a plurality of pieces having different dimensions.

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